Properties of Light and Electricity

4-5 The student will demonstrate an understanding of the properties of light and electricity. (Physical Science)

4-5.6 Summarize the function of the components of complete circuits (including wire, switch, battery, and light bulb).
Taxonomy level: 2.4-B Understand Conceptual Knowledge

Previous/Future knowledge: Students have not been introduced to the concept of electricity and circuits in previous grades. They will further develop the concepts circuits as they study electric motors, generators and electromagnets in 6th grade (6-5.3) and circuit diagrams in high school Physical Science (PS-6.8).

It is essential for students to know the components of a complete *circuit* (a closed path through which electricity flows) and their symbols including the wire, switch, battery, and light bulb (see also 4-5.7). The components of complete circuits with their symbols in parentheses are listed below with their functions:

- The *wire* () conducts the electric *current* (the flow of electricity)
- The *switch* ( ) completes the circuit and allows current to flow if closed and stops the current if open
- The *battery* () pushes the electric current around the circuit
- The *light bulb* () is the object in the circuit that changes electrical energy to light energy

It is not essential for students to know how these components function or what would happen if more components were added to the circuit.

Assessment Guidelines:
The objective of this indicator is to *summarize* the function of the components of a complete electrical circuit; therefore, the primary focus of assessment should be to generalize major points about characteristics and functions of the circuit components. However, appropriate assessments should also require students to *interpret* a diagram of a circuit with the symbols of the components; *compare* components of the circuit; *recognize* components of the circuit and their symbols and what they do in the circuit; or *infer* what would happen if various components were missing or if the switch were open or closed in the circuit.